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disc 22 corresponding to the size of various coins is ready, this apparatus is easily applicable to the coins of each country. In addition, as above mentioned, although the gear part 22 of the revolving shaft 19 and the bore 34 of the carrier board 32 have a hexagonal shape, respectively, these components may consist of star type or petal type. In other words, it is desirable that the hexagonal spine is the shape which is not deformed under a strong torque.

FIG. 5 shows the other example of a stopper 100. This stopper 100 is equivalent with two small-hole 9H at the apical surface of the wedge part 9 of a flea tooth shape. A small steel ball 9B is embedded via the grease for lubrication in the small hole 9H, respectively. In this way, as the wedge part 9 is in contact with the cone part 8 of the revolving shaft 19 via the steel ball 9B, the wedge part 9 is not worn out.

The discharge apparatus by this invention can also perform regulation of the coin thickness extremely simply and can easily exchange the discs for discharging a coin by one step.

As to the disc 22 and as shown in FIG. 6, a thick large disc is the main disc 51 which forms the principal part of the discharge apparatus for discharging the disc body in accordance with this invention. The main disc 51 is made with a sintered metal or a die cast. The main disc 51 is inserted in the upper end part of a rotating shaft 53 via a cylinder part 52 formed in the central part and is secured.

The rotating shaft 53 is rotated counterclockwise (FIG. 6) by means of a drive unit comprising an electric motor and a gear apparatus (not illustrated). The main disc 51 is equipped in a peripheral direction with four fairly large openings 54 at equal intervals. The circumference part of the under-surface of the main disc 51 is equipped in a peripheral direction with four triangular type fairly large hollows 55 at equal intervals. Therefore, four long and slender cutoff notches formed on the long-side part of the triangle of a hollow 55 are formed on the circumference of the main disc 51.

The top part of the hollow 55 formed against a cutoff notch is connected to a through-hole 53. A long and slender arm 56 is formed between adjacent hollows. In addition, the long and slender arm 56 is notched. Therefore, when the main disc 51 rotates contact between a guide pin (not shown) and the long and slender arm 56 is prevented. Some small holes 57 are formed on the circumference part of the upper surface of the main disc 51. A small hole 57 embeds a forceful magnet 58 made from a rare earth metal.

As to the upper part of FIG. 6, a thin large disc is the iron cover disc 61 which forms the principal part of the discharge apparatus for the disc bodies in accordance with this invention. The cover disc 61 is equipped with an open hole 62 at its central part. An open hole 62 relieves the cylinder part 52. The cover disc 61 is in a peripheral direction equipped with four fairly large penetration tubes 64 at equal intervals adapted to register with openings 54. The penetration tube 64 is formed downward. In addition, the diameter and the depth of the penetration tube 64 are selected in consideration of the size of the disc body for which a discharge is desired. The circumference part of the cover disc 61 includes protrusions 67. The protrusions 67 face downward. Each protrusion 67 is received in the small hole 57 to couple the main and cover discs 51, 61.

In addition, a stir pin 69 is used in place of the protrusion 67 suitably. In this case, the stir pin 69 is made from iron. And when the stir pin 69 is used, the cover disc 61 can also be molded by resin.

As to this example which consists of the above component, the cover disc 61 is put on the main disc 51.

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And, they are integrated as shown in FIG. 7. That is, the open hole 62 of the cover disc 61 is inserted in the cylinder part 52 of the main disc 51. Moreover, the protrusion 67 is put in the small hole 57. The protrusion 67 and magnets 58 retain the cover disc 61 to the main disc.

In this way, if the disc body comes from the upper part of FIG. 7, an electric motor (not shown) will operate. And, the cover disc 61 rotates counterclockwise. In this way, the disc body is put into the penetration tube 64 of any one of the cover disc 61. When the cover disc 61 rotates, the disc body put into the penetration tube 64 slides on the upper surface of a base (not shown). One disc body which slides on the upper surface of a base is pushed from the penetration tube 64 into the opening 55 by a guide pin (not shown) which projects from the upper surface of a base into the space between main disc 51 and base.

And, when the cover disc 61 is rotated further, one of the disc bodies is pushed by a regulation pin (not shown) which projects from the upper surface of a base. At this time, one of the disc bodies is moved radially outwardly to the exterior of the cover disc 61 by action of the arm 56. Furthermore, the cover disc 61 rotates, the disc body is pushed by only the arm 56 to the exterior of the cover disc 61 for discharge thereof. For this reason, the arm 56 is slotted in order to pass a guide pin or a regulation pin, respectively.

FIG. 9 shows the enlarged principal part of the other example of this invention.

The circumference part of a main disc 91 forms a plurality of screw holes 97. And, the circumference part of a cover disc 101 forms a plurality of small holes 107. And, the cover disc 101 is put on the main disc 91. They are integrated as shown in FIG. 8. That is, the open hole 62 of the cover disc 101 is inserted in the cylinder part 52 of the main disc 91. And, screw 109 is penetrated in a small hole 107 and is fixed to the screw hole 97. In this case, the head part 110 of the Bis-screw 109 is used in place of the stir pin 69.

As mentioned above, according to this invention the main disc of a piece is provided. Furthermore, a plurality of cover discs corresponding to various coins is provided. Therefore, the discharge apparatus for the disc bodies which can change size of a discharge hole simply by only choosing a cover disc depending on the size of the disc body discharged according to this invention is obtained. In other words, the discharge apparatus for disc bodies which can change size of a discharge hole simply depending on the size of the disc body discharged according to this invention is obtained. Especially, the discharge apparatus for the disc bodies according to this invention can exchange the disc for a discharge simply depending on the size of the required coin.

I claim:

1. A discharge apparatus for disc bodies comprising;

a fixed substrate;

a disc spaced from said substrate a distance related to the thickness of said disc bodies, said disc including at least one opening having a diameter adapted to receive a disc body;

means for rotating the disc to accent disc bodies in said opening and said space for discharge thereof, said rotating means including a shaft coupled between said disc and means for rotating the shaft for axial movement thereof and said adjusting means including an elevation body disposed about the shaft and at one end engaging the disc and at the other end including a plurality of axially extending projections and an operation body including a plurality of projections adapted to engage the projections on said elevation body, engagement of said projections displacing said disc to adjust said space

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2. The apparatus of claim 1 wherein, relative to said shaft, said projections on said elevation body and said operation body are arranged annularly and are adapted to, in response to rotation of said operation body, engage to displace said disc to adjust said space.

3. A discharge apparatus for disc bodies comprising;

a fixed substrate;

a disc spaced from said substrate a distance related to the thickness of said disc bodies, said disc including a main disc having coupled to one face thereof a cover disc, each including bores adapted to register to define at least one opening, said disc bodies accepted through said cover disc into said opening, said main disc including at least one arm disposed in said space and adapted to engage a disc body in said space for discharge thereof, said main and cover discs are coupled by one of said discs including a ferromagnetic element and the other including a magnetic element;

means for rotating the disc to accept disc bodies in said opening and said space for discharge thereof; and

means for adjusting said space to accept disc bodies of differing thicknesses.

4. The apparatus of claim 3 wherein said cover disc includes a protruding pin adapted to stir said disc bodies.

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5. A discharge apparatus for disc bodies comprising;  
a fixed substrate;

a disc spaced from said substrate a distance related to the thickness of said disc bodies, said disc including at least one opening having a diameter adapted to receive a disc body;

a shaft coupled between said disc and means for rotating the shaft for axial movement thereof to space said disc relative to said substrate, rotation of said disc to accept disc bodies in said opening and said space for discharge thereof;

an elevation body disposed about the shaft and at one end engaging the disc and at the other end including a plurality of axially extending projections; and

an operation body including a plurality of projections adapted to engage the projections on said elevation body, engagement of said projections displacing said disc to adjust said space to accept disc bodies of differing thicknesses.

6. The apparatus of claim 5 including a stopper to retain said shaft to said substrate.

7. The apparatus of claim 5 wherein said elevation body and operation body projections have a saw-tooth configuration.

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